1.0 Statewide Information Technology Review - Summary

Information Technology - Critical Issues

Information Technology has become an integral part of efficient and accurate governance. In FY 1998, IT accounted for 7 percent of the State's non-compensation expenditures. In the coming fiscal year, state agencies will pursue no fewer than 10 major information systems, including technology that will track convicted felons, connect law enforcement professionals, monitor tax collection, and assure that at-risk children receive the government assistance they require. At the same time, the state must mitigate the millennium bug in existing computers and software.

Recognizing the growing impact of information technology on state services, the Executive Appropriations Committee has resolved that the Capital Facilities and Administrative Services Subcommittee will specifically address major issues related to technology. Following are the items the Analyst recommends for the committee's FY 2000 consideration:

3.1 What level of resources are required to assure that mission critical operations will continue through the Year 2000 (Y2K) date change?

3.2 Given implementation delays, should further resources be provided for law-enforcement's 800 MHz radio conversion in FY 2000?

3.3 How will schedule delays and cost increases impact the viability of the Tax Commission's UTAX system?

3.4 How can Utah leverage the successful development of the Department of Corrections' O-Track system through sales to other states?

3.5 Should the state support transition of both existing public television transmission frequencies (KUED and KULC) from analog to digital broadcasting?

3.6 Should the Legislature increase appropriations for the Automated Geographic Reference Center?

3.7 How can the State improve oversight of information technology projects?

3.8 Other Information Technology Projects

State Automated Child Welfare Information System (SAFE)
Utah Statewide Immunization Information System (USIIS)
Tax Remittance Processors
EDNET
Utah*LINK*

2.0 Statewide Information Technology Review - Budget Highlights

State-wide Information Technology Funding

	FY 1998	FY 1999			FY 2000	Change from
Government	**Actual**	**Estimated**	**Supplemental***	**Revised**	**Analyst**	**FY 1999 Revised**
IT Base Budgets	$44,682,100	$29,543,100	$0	29,543,100	$29,715,100	172,000
ITS Charges	22,680,900	22,746,500	0	22,746,500	22,108,400	(638,100)
WAN Connectivity	5,756,600	5,887,700	0	5,887,700	5,898,000	10,300
Y2K	2,007,600	8,111,600	4,716,300	12,827,900	1,019,700	(11,808,200)
UCAN 800 MHz	0	1,519,300	421,400	1,940,700	110,600	(1,830,100)
UTAX	8,760,900	17,650,000	0	17,650,000	8,500,000	(9,150,000)
O-Track	477,800	1,000,000	0	1,000,000	1,050,000	50,000
AGRC	1,248,200	1,797,500	0	1,797,500	1,266,100	(531,400)
Total	$85,614,100	$88,255,700	$5,137,700	$93,393,400	$69,667,900	($23,725,500)
Education						
Y2K	$0	$0	$5,687,600	$5,687,600	$0	($5,687,600)
Utah Ed Network (D-TV)	8,750,000	12,383,100	0	$12,383,100	17,673,700	$5,290,600
USHE Tech Initiative	1,800,000	2,600,000	0	$2,600,000	2,600,000	$0
USHE Institutional Tech	0	1,180,300	0	$1,180,300	200,000	($980,300)
Elec Comm College	0	118,600	0	$118,600	532,600	$414,000
USOE Tech Initiative	6,419,200	8,505,700	0	$8,505,700	8,970,300	$464,600
Total	$16,969,200	$24,787,700	$5,687,600	$30,475,300	$29,976,600	($498,700)

*Tentative

Executive Agencies, Courts and the Legislature

The Analyst recommends flat funding compared with FY 1999 estimated expenditures for information technology base budgets in executive agencies, courts, and the Legislature. These base budgets include data processing current expenses like those paid to the Division of Information Technology Services, and capital outlay for new personal computers, software, and high-end computing devices.

In addition to base resources, the Analyst recommends $15.7 million in one-time FY 1999 supplementals and FY 2000 authorizations for various IT projects. Of the recommended one-time funding, $8,500,000 is for the Tax Commission's UTAX project, $1,050,000 is for the Corrections Department's Offender Tracking System (O-Track), $5,736,000 is for the Year 2000 (Y2K) computer glitch, and $421,000 would fund conversion of law enforcement radios to the 800 MHz frequency band.

Higher and Public Education

For those higher and public education IT initiatives specifically addressed by the Legislature, the Analyst is recommending new funding of $12.7 million in FY 1999 and FY 2000. The recommended increase is dominated by $5,687,600 to repair the Y2K problem, and $6,090,600 to convert educational television from analog to digital broadcasting. The analyst is unable to quantify information technology base budgets in education due to a lack of reliable data.

IT Data Still Lacking

While the State uses its financial database to report IT expenditures by object type (software, hardware, consulting, etc.), it does not track IT on a project basis, making high-level project management and oversight difficult. The State should take advantage of capabilities already built-in to its financial software to improve reporting on important and costly IT projects.

3.0 Statewide Information Technology Review - Programs

3.1 What level of resources are required to assure that mission critical operations will continue through the Year 2000 (Y2K) date change?

Option One (Recommended)

The Analyst recommends, subject to funding availability, providing $11,423,600 to the Division of Finance as detailed in table 3.1a for state agencies, higher, and public education to address the Year 2000 computer problem.

Table 3.1a - Y2K Option One

			Analyst	
	FY 1998	FY 1999	FY 1999	FY 2000
Financing	**Actual**	**Estimated**	**Supplemental***	
General Fund	$0	$0	$0	$0
General Fund (1-time)	1,859,000	1,563,900	3,478,900	0
Commerce & Revenue Fund	0	350,000	330,000	0
Uniform School Fund	0	0	0	0
Uniform School Fund (1-time)	667,700	1,290,000	6,595,000	0
Federal Funds**	1,961,000	1,749,700	0	1,019,700
Beginning Non-lapsing	72,100	2,552,200	0	0
Ending Non-lapsing	(2,552,200)	0	0	0
Total	2,007,600	7,505,800	10,403,900	1,019,700
Programs				
Administrative Services	$267,565	$1,250,594	$1,500,000	$0
Commerce	0	350,000	330,000	0
Corrections	0	0	550,000	0
Health	106,161	511,974	400,000	0
Human Services	778,091	2,809,009	935,200	1,019,700
Human Resource Mgt	0	0	0	0
Labor Commission	0	100,000	0	0
Natural Resources	0	0	0	0
Tax Commission	855,813	1,509,193	907,400	0
Public Safety	0	0	93,700	0
Workforce Services	0	975,000	0	0
Public Education	0	0	687,600	0
Higher Education	0	0	5,000,000	0
Total	2,007,600	7,505,800	10,403,900	1,019,700

*Tentative

**FY 1998 Federal fund expenditures estimated based on proportion of State funds spent.

The Analyst also recommends that these funds be allocated to individual agencies and institutions only for the mitigation of two digit date fields in mission critical information systems as deemed appropriate by the Chief Information Officer (CIO) and state Year 2000 Coordinator jointly. To that end, the analyst recommends the following intent language:

> *"It is the intent of the Legislature that funds for statewide Year 2000 Mitigation are non-lapsing and shall be allocated among state agencies and institutions of higher education only for remediation of problems related to two-digit date fields in computing devices as directed by the state's Chief Information Officer and the Executive Director's Office within the Department of Administrative Services."*

Recommended appropriations would address Y2K problems in mission critical executive branch computers such as the Office of Recovery Services Information System (ORSIS), the Unified Social Services Delivery System (USSDS), Corrections' Offender Based Statistical Comparison Information System (OBSCIS), Tax Commission tax systems, Commerce licensing systems, and public safety communications systems. It will also fund repair or replacement of embedded chips in lab equipment and mechanical devices such as elevators, sprinklers, security, and heating systems. For public and higher education, the funds will cover administrative systems, networks and servers, telecommunications switches, and embedded chips in mechanical devices and research equipment. Replacement of personal computers (PCs) will be addressed using base resources.

Option Two

In addition to the recommended funding level, the Legislature may wish to provide $7 million from the Uniform School Fund to Higher Education in FY 2000 for replacement and repair of PCs and peripherals. Such appropriations would allow various institutions of higher education to replace approximately 10 percent of their personal computer installed base, including those PCs which interact with mission-critical applications. In a November, 1998 third-party review of higher education's Y2K challenges, the state Chief Information Officer and Year 2000 Coordinator deemed the level proposed by Option Two as "a minimal funding level to address only known problems."

Option Three

Table 3.1b - Y2K Option Three

			Agency Request	
	FY 1998	**FY 1999**	**FY 1999**	**FY 2000**
Financing	**Actual**	**Estimated**	**Supplemental**	
General Fund	$0	$0	$0	$135,000
General Fund (1-time)	1,859,000	1,563,900	282,400	4,977,300
Commerce & Revenue Fund	0	350,000	0	330,000
Uniform School Fund	0	0	0	0
Uniform School Fund (1-time)	667,700	1,290,000	12,000,000	20,000,000
Federal Funds**	1,961,000	1,749,700	0	1,019,700
Beginning Non-lapsing	72,100	2,552,200	0	0
Ending Non-lapsing	(2,552,200)	0	0	0
Total	2,007,600	7,505,800	12,282,400	26,462,000
Programs				
Administrative Services	$267,565	$1,250,594	$100,000	$1,500,000
Commerce	0	350,000	0	330,000
Corrections	0	0	0	550,000
Health	106,161	511,974	0	400,000
Human Services	778,091	2,809,009	0	2,764,600
Human Resource Mgt	0	0	48,600	0
Labor Commission	0	100,000	0	0
Natural Resources	0	0	0	10,000
Tax Commission	855,813	1,509,193	0	907,400
Public Safety	0	0	133,800	0
Workforce Services	0	975,000	0	0
Public Education	0	0	12,000,000	0
Higher Education	0	0	0	20,000,000
Total	2,007,600	7,505,800	12,282,400	26,462,000

*Tentative

**FY 1998 Federal fund expenditures estimated based on proportion of State funds spent.

As an alternative to the recommended option, the Legislature may wish to appropriate Y2K funding directly to requesting entities at levels originally requested as detailed in table 3.1b.

This funding level would address all items covered in options one and two above, as well as finance a portion of the University of Utah's PeopleSoft administrative and student services system, purchase approximately 9,000 new desk-top computers for public and higher education, provide funding for public out reach, and provide contingency funding at various state agencies.

Background

The year 2000 bug is linked to efficiency measures employed by early computer programmers. In an attempt to save valuable memory capacity, programmers used two rather than four digits to identify years – "98" instead of "1998". When systems still using such programs reach the end of the millennium, two-digit date fields will show "00", making it impossible for the computer to differentiate between 1900 and 2000. Consequently, date dependent systems may malfunction or fail completely.

State Government

As of December, 1998, Utah's executive branch reported 68 percent of its mission critical systems were Year 2000 compliant. Should executive agencies sustain their past completion rate of 5 percent per month, the branch will have all mission critical systems completed by August, 1999. The State's Chief Information Officer is not centrally tracking Y2K compliance of PCs, but has assured the Executive Appropriations Committee that they are being addressed through the regular replacement cycle.

Public Education

Public education reported in July, 1998 that thirteen of its fifteen centralized administrative systems could handle 2000 dates, and that it would require no additional State funds to replace noncompliant systems before the millennium. As of January, 1999, the State Office of Education was still renovating the two noncompliant systems identified in July, 1998, and had begun to rewrite one system which, while previously counted as Y2K compliant, will be made more robust. Work on these systems will be completed by July,1999. In October, 1998 public education reported to the Information Technology Commission, that the cost of replacing noncompliant PCs in public schools would be approximately $26,800,000, but that "Districts are dedicating their own resources, both financial and human, to addressing compliance issues."

Higher Education

As of November, 1998, higher education had nearly completed updates to financial records, purchasing, payroll, personnel, admissions, student records, financial aid, billings and receivables systems at eight of the nine institutions. The ninth, the University of Utah, was undertaking complete replacement of its legacy systems. A November 24 third party review of higher education Y2K problems conducted by the Office of the Chief Information Officer found networks, telecommunications systems, mechanical devices, research equipment, and desk-top PCs had yet to be adequately addressed and stated that "state campuses and universities must consider a process of triage to assure that all mission-critical Y2K issues are resolved in the next 13 months."

State government's highest information technology priority, as articulated by the Chief Information Officer, is to "be prepared for the Year 2000."

3.2 Given implementation delays, should further resources be provided for law enforcement's 800 MHz radio conversion in FY 2000?

Option One (Recommended)

The Analyst tentatively recommends providing $421,400 in FY 1999 supplemental one-time resources from the General Fund as detailed in Table 3.2a to finance the Utah Communications Agency Network's (UCAN) transition to law-enforcement communications on frequencies in the 800 MHz band.

The Analyst also recommends an FY 2000 base reduction of $370,500 for the Utah Department of Transportation. The Department is currently re-evaluating its need for 800 MHz radios.

Table 3.2a - UCAN Option One

			Analyst		
Financing	**FY 1998 Actual**	**FY 1999 Estimated**	**FY 99 Supplemental***	**FY 99 Revised**	**FY 00**
General Fund	$0	$110,600	$0	$110,600	$110,600
General Fund (1-time)	185,000	955,400	421,400	1,376,800	0
Transportation Fund	0	370,500	0	370,500	0
Transportation (1-time)	0	82,800	0	82,800	0
Beginning Non-lapsing	0	185,000	0	0	0
Ending Non-lapsing	(185,000)	0	0	0	0
Transfers	0	(185,000)	0	0	0
Total	0	1,519,300	421,400	1,940,700	110,600
			Analyst		
Programs	**FY 1998**	**FY 99**	**FY 99**	**FY 99**	
On-going Funds	**Actual**	**Estimated**	**Supplemental***	**Revised**	**FY 00**
Corrections	$0	$63,000	$0	$63,000	$63,000
Facilities Mgt.	0	0	0	0	0
Natural Resources	0	22,000	0	22,000	22,000
Public Safety (Radios)	0	25,600	0	25,600	25,600
Transportation	0	370,500	0	370,500	0
Subtotal	0	481,100	0	481,100	110,600
One-time Funds					
Corrections	$0	$276,700	$146,800	$423,500	$0
Facilities Mgt.	0	79,000	0	79,000	0
Natural Resources	0	197,700	57,700	255,400	0
Public Safety (Radios)	0	112,300	216,900	329,200	0
Public Safety (Consoles)	0	289,700	0	289,700	0
Transportation	0	82,800	0	82,800	0
Subtotal	0	1,038,200	421,400	1,459,600	0
Total		1,519,300	421,400	1,940,700	110,600

*Tentative

The Analyst further proposes the following intent language:

> *"It is the intent of the Legislature that funds provided for 800 MHz conversion in FY 1999 be nonlapsing and that those funds not used to pay service charges be used to purchase radio equipment."*

When combined with resources provided by the FY 1999 appropriations act, and with FY 2000 ongoing base funds, the recommended level will allow state agencies to

purchase the number of radios and consoles envisioned in year one of UCAN's implementation plan as well as pay for six-months of operations beginning in January 2000 (see Table 3.2c). Funding provided to the Department of Transportation in FY 1999 alone ($370,500 base, $82,800 one-time) is sufficient to purchase more than the number of radios included in the first year of UCAN's plan for that department as well as pay for six months service on those units.

Option Two

As an alternative to the recommended option, the Legislature may choose to provide no additional funding for 800 MHz conversion in FY 1999 or FY 2000. Given that the project is at least six months behind schedule, that one of the state's largest potential user -- the Department of Transportation -- is re-evaluating the extent of its need for 800 MHz radios, and that UCAN has yet to secure the participation of Salt Lake City and Salt Lake County in the network, the Legislature may find it prudent to wait until the FY 2001 budget cycle to appropriate further funds in support of the project. Such an approach assumes that money appropriated in FY 1999 ($1,519,300) as well as ongoing base funds ($481,100) in FY 2000 will be used to purchase radio equipment or pay for service should it begin before July, 2000, and that UCAN and its contractors will use the interim period to prove the network's viability and recruit other pivotal users.

Option Three

As an alternative to the recommended option, the Legislature may choose to fund 800 MHz conversion at levels requested by state agencies as detailed in table 3.2b.

Under this option, the Department of Corrections would receive an additional $1,287,800 in FY 2000 to purchase radios, install repeaters at or near correctional facilities, and pay whatever service fees they may incur. Other agencies would receive ongoing base funds appropriated in FY 1999, including $370,500 for the Department of Transportation. These funds would presumably be used to purchase equipment until such time as UCAN begins charging for service.

Table 3.2b - UCAN Option Three

Financing	FY 1998 Actual	FY 1999 Estimated	FY 00 Agency	Change from FY 1999
General Fund	$0	$110,600	$344,100	$233,500
General Fund (1-time)	185,000	955,400	1,054,300	98,900
Transportation Fund	0	370,500	370,500	0
Transportation (1-time)	0	82,800	0	(82,800)
Beginning Non-lapsing	0	185,000	0	0
Ending Non-lapsing	(185,000)	0	0	0
Transfers	0	(185,000)	0	0
Total	0	1,519,300	1,768,900	249,600

Programs	FY 1998	FY 99	FY 00	Change from
On-going Funds	**Actual**	**Estimated**	**Agency**	**FY 1999**
Corrections	$0	$63,000	$296,500	$233,500
Facilities Mgt.	0	0	0	0
Natural Resources	0	22,000	22,000	0
Public Safety (Radios)	0	25,600	25,600	0
Transportation	0	370,500	370,500	0
Subtotal	0	481,100	714,600	233,500
One-time Funds				
Corrections	$0	$276,700	$1,054,300	$777,600
Facilities Mgt.	0	79,000	0	(79,000)
Natural Resources	0	197,700	0	(197,700)
Public Safety (Radios)	0	112,300	0	(112,300)
Public Safety (Consoles)	0	289,700	0	(289,700)
Transportation	0	82,800	0	(82,800)
Subtotal	0	1,038,200	1,054,300	16,100
Total		1,519,300	1,768,900	249,600

Background

As a result of Federal Communications Commission policy to reallocate public safety radio spectrum, 1997 Utah House Bill 187 created the Utah Communications Agency Network (UCAN) to coordinate state and local governments construction of a new law enforcement radio system operating in the 800 MHz bandwidth. The Departments of Administrative Services, Transportation, Natural Resources, Public Safety, and Corrections were appropriated about $1.5 million to purchase radios and begin service in FY 1999.

Table 3.2c - UCAN

COMPARISON OF YEAR ONE COSTS AND RECOMMENDED FUNDING

Year 1 Costs	Number of Units	Capital Costs	6 months Service	Total
Corrections	312	$493,300	$56,200	$549,500
Facilities Mgt.	45	70,900	8,100	79,000
Natural Resources	170	268,800	30,600	299,400
Public Safety (Radios)	216	341,500	38,900	380,400
Public Safety (Consoles)	2	289,700	0	289,700
Transportation	257	407,000	46,300	453,300
Total	1002	1,871,200	180,100	2,051,300

Cumulative Appropriations	FY 99 Estimated	FY 99 Supplemental	FY 00 Base	Total
Corrections	$339,700	$146,800	$63,000	$549,500
Facilities Mgt.	79,000	0	0	$79,000
Natural Resources	219,700	57,700	22,000	$299,400
Public Safety (Radios)	137,900	216,900	25,600	$380,400
Public Safety (Consoles)	289,700	0	0	$289,700
Transportation	453,300	0	0	$453,300
Total	1,519,300	421,400	110,600	2,051,300

According to UCAN's plan, phase one of the network will cover Davis, Morgan, Salt Lake, Summit, Tooele, Utah, Wasatch, and Weber counties, thus serving about 80 percent of the state's population. Local entities in each of the above mentioned counties will use the network, with the exception of Salt Lake City and Salt Lake County, which have opted to build separate networks. Network infrastructure, not including radios and dispatch consoles, will be built under contract with Motorolla, and financed with $6-$8 million in Federal grants as well as monthly service fees of $30 per radio for State agencies and about $17.50 per radio for local governments. Phase one will be implemented over a three-year period with about 25 percent of projected radio equipment to be in place the first year.

Delays in negotiation with local governments will push the system's in-service date, planned for July, 1999, to January, 2000. As mentioned above, Salt Lake City, which UCAN had originally anticipated would participate in the system, will build a separate network.

3.3 How will schedule delays and cost increases impact the viability of the Tax Commission's UTAX system?

Option One (Recommended)

The Analyst recommends providing $8.5 million from general obligation bonding to continue implementation of the UTAX system. However, the Analyst is concerned with schedule delays, cost increases, and poor returns associated with the system, and therefore recommends the following intent language:

> *It is the intent of the Legislature that the Utah State Tax Commission carry forward year end balances during the term of the UTAX project, for costs directly related to UTAX, and that FY 2000 funding availability is contingent upon the Utah State Tax Commission demonstrating to the Executive Appropriations Committee three consecutive months of observed positive net monthly benefits for all tax types when compared with agreed upon benchmark revenue projections as a result of the Computer Assisted Collections System for Government module.*

Table 3.3 - UTAX Option One

Financing	FY 1998 Actual	FY 1999 Estimated	FY 2000 Analyst
GF Rest - Sales and Use Tax Admin Fees	$0	$2,000,000	$0
General Obligation Bonds	8,760,900	15,650,000	8,500,000
Total	**8,760,900**	**17,650,000**	**8,500,000**
Programs			
UTAX (One-time)	$8,760,900	$17,650,000	$8,500,000
Total	**8,760,900**	**17,650,000**	**8,500,000**

This level of funding is $900,000 more than the final installment on the previously agreed upon total cost of UTAX ($34 million). The Tax Commission has notified the Analyst that an additional $4 million will be required in FY 2001 to complete the project.

Option Two

As an alternative to the recommended option, the Legislature may choose to provide no additional funding for UTAX in FY 2000, and direct the Tax Commission to undertake a cost-benefit analysis of the motor vehicle and Advantage Revenue modules of the UTAX system to document expected returns on investment before requesting additional funding in FY 2001.

Option Three

As an alternative to the recommended option, the Legislature may choose to fund UTAX at the previously agreed upon cost baseline by providing $7.6 million in FY 2000. Additional funding could be made contingent upon the Tax Commission demonstrating benefits sufficient to justify further investment.

Background

The Utah State Tax Commission currently operates four separate mainframe tax systems that do not effectively communicate with one another. UTAX, a new system procured from American Management Systems (AMS), would integrate the state's tax systems, allowing the commission to compare motor vehicle registrations with income

tax filings and determine an individual's total tax liability, as well as more easily reconcile ledgers and maintain audit trails. UTAX consists of a delinquent collections module known as Computer Assisted Collections System for Government (CACSG), an integrated tracking system for all tax types known as ADVANTAGE Revenue, and a motor vehicle tax system for vehicle registration and titling.

In previous legislative sessions, the Tax Commission has stated that the entire UTAX system would be in place by the end of 1999. It has also set a target cost of UTAX at $34 million. The Commission has suggested that such cost would be wholly offset by increases in revenue to the state. To date, Tax has received $26.4 million for UTAX (not including $1.3 million appropriated for system planning in FY 1996) and has fully implemented the CACSG module.

In September, 1998, management consulting firm Deloitte and Touche, under contract to the Tax Commission, recommended delaying completion of UTAX by six months to a year. At the same time, the commission determined that, anticipated delays included, the total cost of UTAX would be closer to American Management Systems' original bid of $40 million. Further, commission analysis shows that, as of December, 1998, nine months after CACSG implementation, the new system has generated no more revenue than would have been expected under previous practices.

3.4 How can Utah leverage the successful development of the Department of Corrections' O-Track system through sales to other states?

Option One (Recommended)

The Analyst recommends that the Utah Department of Corrections fund remaining development work on the Offender Tracking System (O-Track) using contractor consulting credits earned as a result of the system's sale to other states. Correspondingly, the Analyst recommends a base funding reduction of $400,000.

Table 3.4a - O-Track Option One

Financing	FY 1998 Actual	FY 1999 Estimated	FY 2000 Analyst
General Fund	$400,000	$400,000	$0
General Fund (One-time)	0	400,000	0
Dedicated Credits	0	0	1,050,000
Beginning Non-lapsing	200,000	122,200	0
Ending Non-lapsing	(122,200)	0	0
Transfer	0	77,800	0
Total	**477,800**	**1,000,000**	**1,050,000**
Programs			
O-Track	$477,800	$1,000,000	$1,050,000
Total	**477,800**	**1,000,000**	**1,050,000**

Consulting credits are more than sufficient to fund Corrections' requested base level of $800,000 for O-Track and leave $250,000 that could be used for system maintenance in FY 2001. An additional $550,000 appropriation for O-Track related Millennium Bug (Y2K) expenses is included in a separate recommendation. Should Corrections not receive sufficient programming credit in FY 2000, the agency has at its disposal more than $1 million in FY 1999 funds for "computers and improvements" that it has asked to nonlapse. These funds could be spent on O-Track.

Option Two

Table 3.4b - O-Track Option Two

Financing	FY 1998 Actual	FY 1999 Estimated	FY 2000 Option 2
General Fund	$400,000	$400,000	$400,000
General Fund (One-time)	0	400,000	0
Dedicated Credits	0	0	475,000
Beginning Non-lapsing	200,000	122,200	0
Ending Non-lapsing	(122,200)	0	0
Transfer	0	77,800	0
Total	**477,800**	**1,000,000**	**875,000**
Programs			
O-Track	$477,800	$1,000,000	$875,000
Total	**477,800**	**1,000,000**	**875,000**

As an alternative to the recommended option, should additional funds become

available, the Legislature may choose to leave Corrections' $400,000 O-Track base intact. This base funding would offset the risk that other states may not exercise their option to purchase phase two of O-Track, and thus Corrections may only receive $475,000 in consulting credit. In this scenario, provided funding would cover Corrections $800,000 base request, leaving $75,000 for future maintenance expenses.

Option Three

The Legislature may choose to provide the Department of Corrections' requested funding level.

Table 3.4c - O-Track Option Three

Financing	FY 1998 Actual	FY 1999 Estimated	FY 2000 Agency
General Fund	$400,000	$400,000	$800,000
General Fund (One-time)	0	400,000	0
Dedicated Credits	0	0	0
Beginning Non-lapsing	200,000	122,200	0
Ending Non-lapsing	(122,200)	0	0
Transfer	0	77,800	0
Total	**477,800**	**1,000,000**	**800,000**
Programs			
O-Track	$477,800	$1,000,000	$800,000
Total	**477,800**	**1,000,000**	**800,000**

This option would require an ongoing base increase of $400,000 in FY 2000. As mentioned above, Corrections $550,000 one-time funding increase request is treated in a separate recommendation on the Millennium Bug (Y2K). Consulting credits would be used by Corrections for enhancements to O-Track at the Department's discretion.

Background

Included in the Department of Corrections' budget request are continuing funds for a system that will streamline processing of inmates from pre-sentence investigation through parole, and directly interface with Courts, Public Safety, and other primary stakeholders. The Offender Tracking System (O-Track) will, by June, 1999, replace Corrections' current system, the Offender Based Statistical Comparison Information System (OBSCIS), at a contract cost of $3.7 million plus as much as $1.2 million for in-house labor costs.

Corrections, and its contractor Informix, have implemented two O-Track modules, one which tracks individuals on parole (F-Track), and one which tracks sex offenders (I-Track). The team is well into the remaining inmate accounting and offender management modules for use in the State's prisons. These modules must be in place prior to December 31, 1999 so that Corrections can move off its Y2K noncompliant Wang computer system.

In the past year, Corrections and Informix have successfully marketed the system to two other states. Both Alaska and New Mexico have agreed to purchase portions of the O-Track system that will allow the states to reach Year 2000 compliance. Phase one of the sales to Alaska will garner $225,000 for Utah, and should Alaska choose to continue with phase two, Utah will receive and additional $225,000. Similarly, Utah

will get $250,000 for sale of phase one to New Mexico, while phase two would bring $350,000 in programming credit.

In addition to these credits, Corrections should see productivity improvements due to management modules not originally planned for O-Track, but added at the request of users. Further, the Department has not factored into its budget calculations operational cost savings that should result from retirement of OBSCIS and the Wang.

3.5 Should the state support transition of both existing public television transmission frequencies (KUED and KULC) from analog to digital broadcasting?

Option One (Recommended)

The Analyst recommends $4,215,000 for the transition of both KUED channel seven and KULC channel nine from analog to digital broadcasting. General Obligation Bonds could be considered as a funding source if other funds are not available. In addition, the Analyst recommends the use of $1,875,600 in dedicated credits for the construction of new broadcast facilities. Should G.O. bonds be used, the Analyst recommends the following intent language:

> *It is the intent of the Legislature that funds provided for digital television transitions are nonlapsing and that any future dedicated credits related to UEN E-Rate funding commitments shall be applied to the bond principal.*

Table 3.5a - D-TV Options One and Two

Financing	FY 2000 Analyst	FY 2000 Option 2
Uniform School Fund (One-time)	$0	$0
General Obligation Bond	4,215,000	1,169,700
Dedicated Credits	1,875,600	1,875,600
Total	**6,090,600**	**3,045,300**
Programs		
Digital TV Conversion	$6,090,600	$3,045,300
Total	**6,090,600**	**3,045,300**

Option Two

As an alternative to the recommended option, the Legislature may choose to support transition of only one broadcast frequency, whereby requiring $1.2 million in bonding. Digital broadcasting allows more content to be carried on a single signal, thus both KUED and KULC programming could continue in standard definition simultaneously using only one transmission channel.

Option Three

Should the Legislature choose not to bond, it may choose to provide funding from the Uniform School Fund over three years for D-TV conversion, as requested by the Utah

Table 3.5b - D-TV Option Three

Financing	FY 2000 Agency	FY 2001 Agency	FY 2002 Agency
Uniform School Fund (One-time)	$1,875,600	$2,720,000	$1,495,000
General Obligation Bond	0	0	0
Dedicated Credits	0	0	0
Total	**1,875,600**	**2,720,000**	**1,495,000**
Programs			
Digital TV Conversion	$1,875,600	$2,720,000	$1,495,000
Total	**1,875,600**	**2,720,000**	**1,495,000**

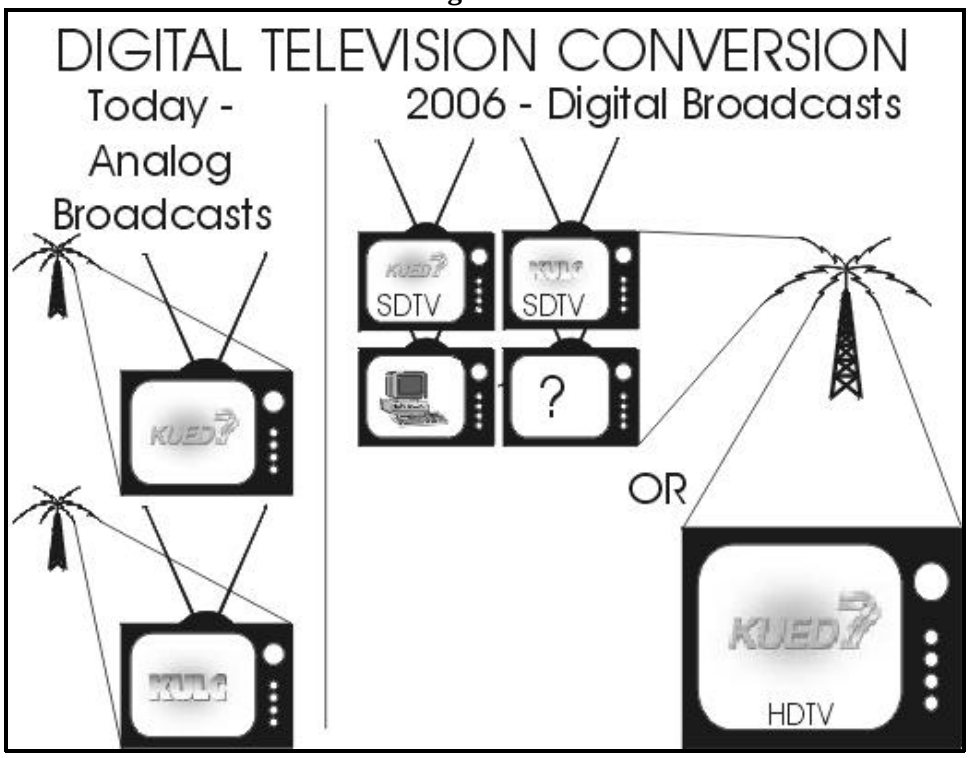
Education Network.

Under the Federal Telecommunications Act of 1996, television broadcasters, including public television stations, are required to transition from analog to digital signal transmission (D-TV) by 2006. To that end, Utah's public television stations, KUED-7 and KULC-9, have joined forces with commercial broadcasters in the state to form DTV of Utah, a consortium that will construct a common digital transmission site on Farnsworth Peak.

Background

As digital transmission allows more information to be carried on the same amount of bandwidth, DTV will allow the Utah Education Network to "multicast" - or broadcast the equivalent of four standard definition programs on a single frequency. Any one or all four of those programs could be replaced by a "datacast" carrying text, sound, graphics, or personal computer content. Alternatively, UEN could show one ultra-high definition program per frequency. The provider could also transmit some combination of multiple programs, data, and increased definition.

Figure 3.5



Washington, D.C. based consulting group Forrester Research predicts that 80 percent of the digital television market will consist of standard definition programming by 2008, with high-definition TV reserved for premium events such as sports and movies. Under this scenario, UEN could broadcast both sets of current programming with a single frequency at standard definition, potentially saving as much as half the cost of new transmission facilities and equipment. However, it would be limited to broadcasting only one high-definition program on a given channel.

The total cost of the transition for both stations, including production equipment and programming, will be more than $15 million. UEN has proposed to finance $9 million

of the total with private philanthropy, federal funds, and base budgets, and is seeking the remaining $6 million in state funding over three years. The state's contribution would finance a new transmitter building, tower, and transmission equipment.

Since making its request, UEN has received federal funding commitments under the E-Rate grant program. These funds, expected to reach $1.9 million before the end of FY 2000, free-up base resources to supplant the requested first year of State funding.

3.6 Should the Legislature increase appropriations for the Automated Geographic Reference Center?

Option One (Recommended)

To remain within given budget constraints, the Analyst recommends flat base funding for the Automated Geographic Reference Center (AGRC) in FY 2000.

Table 3.6a - AGRC Option One

Financing	FY 1998 Actual	FY 1999 Estimated	FY 2000 Analyst
General Fund	$326,600	$376,600	$376,600
General Fund (One-time)	50,000	200,000	0
Federal Funds	207,100	125,000	150,000
Dedicated Credits	664,500	699,500	739,500
Transfers	0	396,400	0
Total	**1,248,200**	**1,797,500**	**1,266,100**
Programs			
AGRC	$1,248,200	$1,797,500	$1,266,100
Total	**1,248,200**	**1,797,500**	**1,266,100**

However, the Analyst recognizes the value of accurate geographic information for a vast number of applications. The Analyst thus encourages AGRC to pursue federal funds, increased dedicated credits as authorized by Utah Code 63A-6-202(3)(b), and other innovative financing arrangements to fulfill its mission.

Option Two

Should additional resources become available, the Legislature may choose to fund AGRC at its requested level of $1,314,500 in FY 2000. This would require an ongoing base budget increase of $198,400.

Table 3.6b - AGRC Option Two

Financing	FY 1998 Actual	FY 1999 Estimated	FY 2000 Agency
General Fund	$326,600	$376,600	$575,000
General Fund (One-time)	50,000	200,000	0
Federal Funds	207,100	125,000	0
Dedicated Credits	664,500	699,500	739,500
Transfers	0	396,400	0
Total	**1,248,200**	**1,797,500**	**1,314,500**
Programs			
AGRC	$1,248,200	$1,797,500	$1,314,500
Total	**1,248,200**	**1,797,500**	**1,314,500**

AGRC would use this funding to further integrate into the State Geographic Information Database (SGID) complete, accurate, and up-to-date geographic data available from a variety of sources. AGRC has acquired federal funds for similar activities in the past, but is looking to secure a more stable funding source for continuing operations.

Background

The Automated Geographic Reference Center (AGRC) was formally created in the Division of Information Technology Services (ITS) by Utah Code 63A-6 Part 2 in 1993. It is mandated to provide geographic information system services to State agencies, federal government, municipalities, and private persons through the creation of a standardized and integrated State Geographic Information Database (SGID). The Center has received a direct appropriation since 1984, but is authorized, through ITS, to set fees for its services.

Geographic information is useful in numerous government applications, including natural resource management, infrastructure development and maintenance, and the establishment of political boundaries. It is also valuable in the private sector for activities such as commercial and residential development, marketing, and delivery/distribution.

A Geographic Information System (GIS) uses computers to integrate like geographic information "horizontally" across large areas – in the case of the AGRC, across the State of Utah. GIS also integrates data "vertically" allowing users to cross-reference multiple sets of data for a given geographic region – for instance, allowing a user to easily identify the roads, hospitals, convenience stores, and elected officials for his or her neighborhood. The integration of geographic information increases its value exponentially.

The AGRC continues to collect and integrate geographic information from numerous sources into a common GIS, the State Geographic Information Database. SGID is available on-line at http://www.its.state.ut.us/agrc/.

In FY 1999, AGRC received $200,000 in one-time appropriations through House Bill 3 to support rural government acquisition of geographic data. An additional $396,000 was transferred to AGRC from other divisions within the Department of Administrative Services.

3.7 How can the State improve oversight of information technology projects?

Recommendation

The Analyst recommends that, in evaluating the FY 2001 budget, the Capital Facilities and Administrative Services Subcommittee and applicable appropriations subcommittees review information technology base budgets. However, in order to do so, the State's Chief Information Officer must integrate budget formulation into his semiannual information technology planning process. The current information collected and evaluated by the CIO does not adequately support appropriations decision making. By making use of existing project fields in the State's financial system and the Governor's budget database, the CIO would facilitate disaggregation of base budgets, and allow for improved oversight.

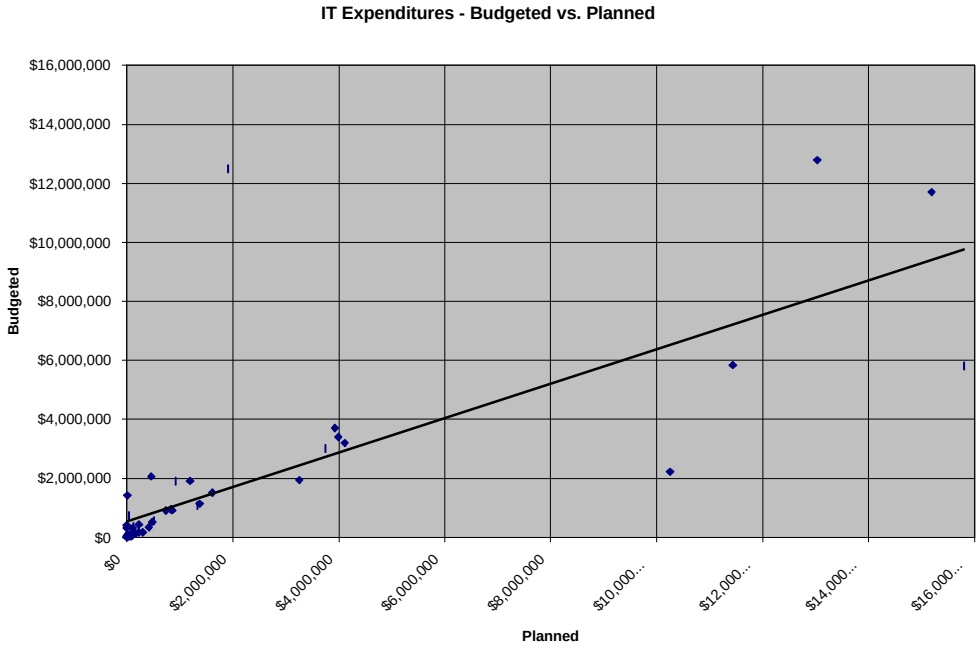
Background

In past years, the Analyst has recommended that in preparing for and evaluating budgets, each appropriation subcommittees schedule time to discuss agency IT expenditures specifically as they relate to an agency's mission. In preparing FY 2000 appropriations, many subcommittees will hear presentations on individual major IT projects. However, the Executive Branch's budgetary and financial systems still do not collect project level budget data, especially with regard to smaller IT purchases that may not require incremental appropriations. Thus, a comprehensive review of IT budgets, including base expenditures, by appropriations subcommittees are still not possible.

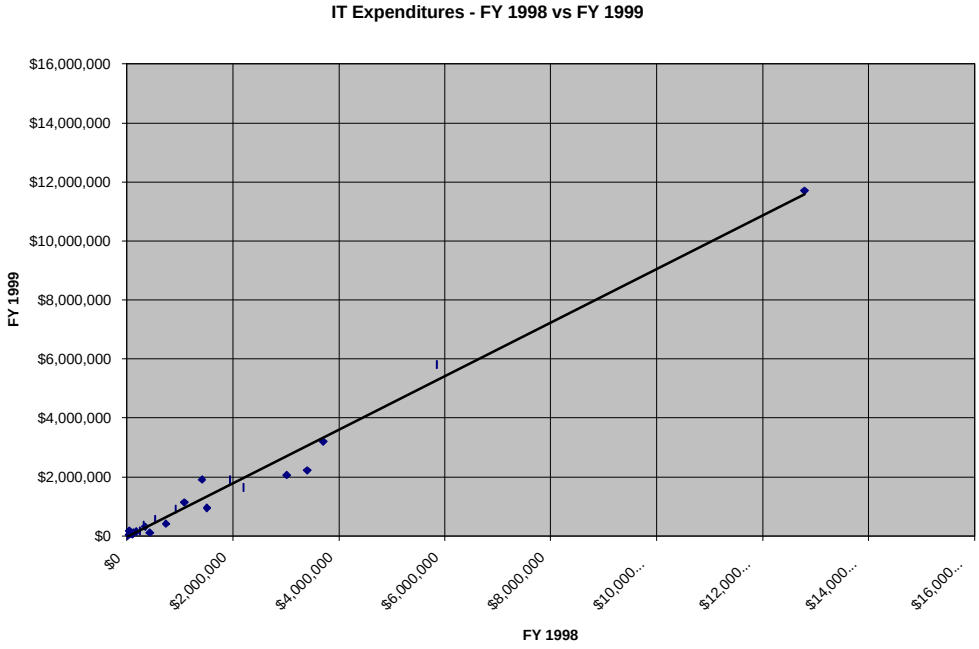
The Utah Information Technology Act (Utah Code 63D-1-301(2)(c)) requires state agencies to submit semiannual information technology plans to the state chief information officer, who shall use them to develop "requests for appropriations for information technology equipment and personnel" and to "coordinate the acquisition of information technology equipment . . . and related services." The plans are to be submitted once "before the legislative session in which the budget request will be heard" and a second time per annum "no later than June 15 after the legislative session in which the budget request was authorized." This suggests that the law intends for the plans to be used, among other things: 1.) to support the annual appropriations process and 2.) to represent "work-plans" reflecting budgetary reality as determined in the appropriations process.

In practice, however, the IT planning schedule runs counter to the budget formulation schedule (and the statutes), with new IT plans developed in the spring, at the beginning of a new fiscal year, rather than in the previous fall, when budgets are submitted. For instance, most departments' FY 1999 IT plans were produced in June 1998, just before the 1999 Fiscal Year, and in most cases did not include projections for the FY 2000 appropriations process which would begin six months hence. Conversely, FY 1999 departmental budgets were submitted six months earlier, in December, 1997, and updated to reflect appropriations action in June, 1998. As a result, the IT plans appear reactionary, rather than forward-leaning and pro-active.

An examination of data from the state budget system (Budget Prep) and the Chief Information Officer's planning database (Envision) demonstrates that little connection exists between IT plans and budgets. A regression analysis of two years' data (FY 1998 and FY 1999) for twenty-seven state agencies reveals a 76 percent correlation between information technology plans and IT budgets, and demonstrates that plans explain only 58 percent of variability in budgets.



By way of comparison, previous and current year IT budgets have a greater than 95 percent correlation, and previous year budgets explain more than 90 percent of the variability in current year budgets.



To improve the relationship between planning and budget, the analyst recommends the following changes to the planning process:

1. Synchronize planning and budget time-lines such that 2001 plans reflect FY 2001 appropriations requests.

2. Fiscally constrain IT plans to avoid their becoming “wish lists”.
3. Prioritize projects contained in the plan based on need, benefit, and return.
4. Utilize project fields in FINET and Budget Prep to allow tracking of expenditures and requests by planned project.
5. Disapprove any planned IT project for which funding is not requested.

The Chief Information Officer is currently undertaking a complete overhaul of the IT planning process, thus no detailed plans were generated in advance of the FY 2000 appropriations process. It is the Analyst’s opinion that the CIO should consider the above listed recommendations in his overhaul and implement said changes for the FY 2001 budget and planning cycle.

3.8 Other Information Technology Projects

State Automated Child Welfare Information System (SAFE)

The Analyst recommends authorizing the Department of Human Services' Division of Child and Family Services to use $1.2 million of federal funds in FY 2000 for personnel expenses related to maintenance of the State Automated Child Welfare Information System (SAFE). The system is designed to improve child welfare case management as a result of David C. vs. Leavitt settlement and is expected to be completely implemented by FY 2000. The recommended level is equal to that requested by the agency, and would be required for the next several years. Half of the recommended federal funding results from transferring TANF (Temporary Assistance for Needy Families) "rainy day funds" to the SSBG (Social Services Black Grant). As a result, the State may need to provide funding from the General Fund for this activity beginning in FY 2002 should federal funds not be available.

Utah Statewide Immunization Information System (USIIS)

The Analyst has not recommended increased appropriations for the Department of Health's Utah Statewide Immunization Information System (USIIS) due to funding constraints. However, should additional funding become available, the Legislature may choose to provide $275,000 from the General Fund as requested by Health's Division of Community and Family Health Services. USIIS is designed to boost immunization rates among Utah children by improving information sharing among health care providers, insurance companies, and governments. State funding would leverage $200,000 in federal funds and $460,000 in private sector and Medicaid contributions to link over 300 private providers to USIIS.

Tax Remittance Processing Equipment

The Analyst does not recommend additional funding for Remittance Processing Equipment requested by the Utah State Tax Commission's Processing Division. The Commission has failed to justify the cost of such equipment based on its benefits. However, the Legislature may choose to authorize Tax to use $180,000 in nonlapsing FY 1999 license plate production fees for the processor. The Legislature appropriated $360,000 to purchase similar equipment in FY 1999. Remittance processors sort and reconcile tax payments and create data for use in tax analysis systems such as UTAX. The third processor would complete the replacement of ten year old 286-family processors currently employed by the Commission.

EDNET

The Analyst has not recommended increased appropriations for the Utah Education Network's (UEN) EDNET system due to funding constraints. However, should additional funding become available, the Legislature may choose to provide $360,000 in ongoing resources from the Uniform School Fund as requested by UEN for increased administrative and lease costs, content development, and engineering support. EDNET is an interactive closed circuit television network that links over 200 rooms in schools, colleges, applied technology centers, and universities.

Utah*LINK*

The Analyst has not recommended increased appropriations for the Utah Education Network's (UEN) Utah*LINK* program due to funding constraints. However, should additional funding become available, the Legislature may choose to provide $1,077,900 in ongoing resources from the Uniform School Fund for equipment and circuit charges, filtering technology, and increased building lease costs. UEN requested $1,653,900 for Utah*LINK*, including funds to replace lost income, cover increased administrative costs, and support the WAG science site. Utah*LINK* is the state wide area data network linking to each other and the Internet over 97 percent of public education sites, many public libraries, all public higher education institutions, and most state government entities.

GLOSSARY OF INFORMATION TECHNOLOGY TERMINOLOGY

Analog
A signal transmission in which voltage varies continuously with time as a representation of a physical quantity (e.g., voice wave forms or potentiometer settings).

Applications
A software program designed to enable end users to carry-out a specific task or function. Word processors, spreadsheets, graphics programs, and data managers are examples of applications.

Architecture
The manner or structure in which hardware or software is constructed. An architecture defines how a system or program is structured, how various components and parts interact, as well as what protocols and interfaces are used for communications and cooperation between modules and components.

Asynchronous
Characterized by not having a constant time interval between successive bits, characters, or events. Transmission generally uses one start and one stop bit for character element synchronization (often called start-stop transmission).

ATM (Asynchronous Transfer Mode)
A transfer mode in which the information is organized into cells. It is asynchronous in the sense that the recurrence of cells depends on the required or instantaneous bit rate. Statistical and deterministic values may also be used to qualify the transfer mode, e.g., the information can be framed within SONET frames or unframed.

Backbone Network
A high-speed transmission facility, or an arrangement of such facilities, designed to interconnect lower-speed distribution channels or clusters of dispersed user devices.

Bandwidth
The range of frequencies of bit rates that can pass over a given circuit. The bandwidth determines the rate at which information can be transmitted through the circuit. The greater the bandwidth, the more information can be sent through the circuit in a given period of time.

BIOS (Basic Input/Output System)
The I/O component of the IBM PC operating system that defines the interface between the operating system and the outside world. Accurate imitation of the IBM PC BIOS is the key to compatibility for clone vendors.

BIPS (Billion Instructions Per Second)
An approximate figure to denote a computer's raw processing power.

B-ISDN (Broadband-Integrated Services Digital Network)
A high-speed (greater than ISDN primary rate), asynchronous time-division multiplexed transmission facility, or an arrangement of such facilities, designed to provide a wide range of audio, video and data applications in the same network.

Bit/Byte
The smallest unit of information used in data processing. It has two possible states, usually called "O" and "I." Bit is a contraction of words "binary digit." A group of eight bits handled as a logical unit.

Broadband
The description for an analog circuit providing greater bandwidth than a voice-grade telephone line, I.e., operating

at a bandwidth of 20KHz or higher. Broadband channels are used for many communications, radio and television broadcasting and some local-area networks. In the digital domain, speeds exceed ISDN primary rate. Also called wideband.

CAD/CAM (Computer-aided Design/Computer-aided Manufacturing)
Interactive graphic programs which automate the methodologies of drafting and design layouts. A few programs are successful enough that it is difficult to justify designing the layouts manually (examples: integrated circuits and printed circuit boards).

CD-ROM (Compact Disk-Read-Only Memory)
Optical storage based on the same technology and media used for audio CDS.

Client/Server Architecture
Client/Server Model
A concept of application deployment that functionally supports the notion of "application execution" as dispatchable units of work that is assigned to a network of servers (resources) that respond to the initiating client. Client/server embodies the general concepts of cooperative processing, distributed processing and networked processing. File print servers represent a crude form of the client/server model. In the full implementation, the client's server model provides a data processing and networking environment that offers:

- Hardware, software and network platform independence (i.e., transparency);
- Application delivery to an intelligent workstation (although an X-terminal-like device may suffice in some environments);
- A consistency of the user interface to the networked system (i.e., operational similarity; and
- Physical topology flexibility.

Compression
The application of any of several techniques that reduce the number of bits required to represent information in data transmission or storage, thereby conserving bandwidth and/or memory.

CPU (Central Processing Unit)
The portion of a computer system that performs computations and contains the memory. It does not include peripherals such as tape, disk and terminals.

DASD (Direct Access Storage Device)
DASD is a general term typically referring to a magnetic disk storage device. Like a very large hard drive.

Digital
A signal transmission technique in which data is conveyed by pulses of electromagnetic energy in a discrete (i.e., on/off) coded pattern representing, for example, bits in a data stream.

Fiber Optics
A high-bandwidth transmission media technology that uses light as a digital information carrier. Fiber telephone transmission media to carry hundreds of thousands of voice circuits. Fiber-optics cables (light guides) are a direct replacement for conventional coaxial cables and wire pairs. The glass-based transmission facilities occupy far less physical volume for an equivalent transmission capacity, which is a major advantage in crowed ducts, and the fibers are immune to electrical interference. In addition, cable manufacturing, installation and maintenance costs are lower.

File Server
A designated location containing files available to all users connected to a LAN. In some LANs, a microcomputer is designated as the file server, while in others a computer with a large disk drive and specialized software acts as

the file server. Some file servers can also offer other resources such as gateways and protocol conversion.

Frame Relay
A system that is connected through different dynamic paths in a "cloud" to other computers in a network.

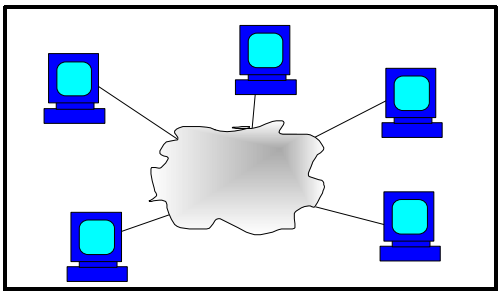


Figure 18 Frame Relay

Gateway
A physical or logical network station that interconnects two otherwise incompatible networks, network nodes, subnetworks, or devices. Gateways perform protocol-conversion operations across a wide spectrum of communications functions or layers.

Hub
A device that connects computers together on a local area network.

LAN (Local Area Network)
User and operated data transmission facility connecting a number of communicating devices (e.g., computers, terminals, word processors, printers and mass storage units) within a single building or campus of buildings. Examples are Ethernet and IBM's Token-Ring Network.

Mainframe
A computer system with a configuration price over $700,000. The configuration price includes the minimum set of peripherals sufficient to IPL the operating system.

MHz (Megahertz)
A measure of electromagnetic frequency equal to one million cycles per second.

Multiplexer
A device that combines input from two or more terminals, computer ports or other multiplexers, and transmits the combined data stream over a single high-speed channel. At the receiving end, the high-speed channel is demultiplexed, either by another multiplexer or by software.

PBX (Private Branch Exchange)
A telephone switch located on a customer's premises that primarily establishes voice-grade circuits (over tie lines to a telephone company central office) between individual users and the public-switched telephone network. The PBX also provides switching within the customer premises local area, and usually offers numerous enhanced features, including least-cost routing and call-detail recording.

Ring
A network topology in which stations are connected to one another in a closed logical circle, with access to the medium passing sequentially from one station to the next by means of polling from a master station, or by passing an access token from one station to another. Also, called a loop.

Router
A device that performs a function similar to a local or remote bride. It connects networks together.

Server

1. A processing environment that services the needs of an end-user or application community; may also refer to the software which runs on the server. Typically, a server will not include any direct end-user access to that processing environment, instead using logic within each user environment (such as a workstation to intercept requests to the operating system and transmit them to the common server for processing. To the application, all requests will appear to be processed locally (within the environment). Servers typically use more powerful processors because there is a "many to few" relationship between the community using the server and the server processing environment.

2. A system or program that is requested to perform some activities by "client" systems or programs to allow it to accomplish specific tasks.

STAR

A network topology in which each station is connected only to a central station by a point-to-point link and communicates with all other stations through the central station.

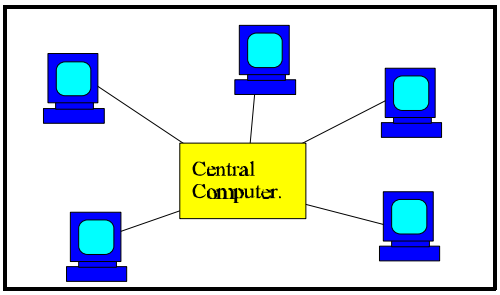


Figure 19 Star Design

Synchronization

The function that ensures specific activities occur at the same point in time in two or more nodes. Typically performed by the operating system environment, synchronization is usually associated with updates to data files or databases; it is used to ensure all physical writing of information to the storage media occurs at the same point to avoid the possibility of one medium being updated, while the other is not due to a failure.

Synchronous

The description for transmission with a constant time interval between successive bits, characters or events. Synchronous transmission uses no redundant information to identify the beginning and end of characters, and thus is faster and more efficient than asynchronous transmission, which uses start and stop bits. The timing is achieved by transmitting sync characters before data; usually synchronization can be achieved in two or three character times.

T1

Digital carrier facility used to transmit digital signals at 1.544 MBPs using 24 -channel pulse code modulation.

T2

A digital carrier facility used to transmit digital signals at 6.312 Mbps.

T3

A digital carrier facility used to transmit digital signals at 44.74 Mbps.

Token Ring

A local-area network access mechanism and topology in which all stations actively attached to the bus listen for a broadcast token or supervisory frame. It uses a ring-shaped layout and token-passing access method to carry data from device to device.

Topology

The logical or physical arrangement of stations on a network in relation to one another. Examples include bus, ring, star, and tree.

Twisted Pair
Two insulated wires twisted together and usually unshielded, (not covered with an outer metallic shield).

UNIX
A family of operating systems known for their relative hardware independence and portable applications interface; a time-sharing operating system widely used in technical and scientific computing applications.

WAN (Wide-Area Network)
A user voice/data transmission facility connecting geographically dispersed sites via long-haul networking facilities.

X-25
An older standard of communicating from client-type computers with a mainframe.